

# MIPIM: Framework for Business Process Improvement

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*Abstract: It is ironical that while business process improvement (BPI) is becoming an established subject field, many research challenges still exist and most organisations are still searching for methods to better manage process change. In this paper, an improvement framework, MIPIM, which incorporates the characteristics of process improvement and modelling, is developed. 'MIPIM' builds on existing approaches in process improvement and modelling techniques and incorporates best practice from academics, consultants and practitioners. The methodology provides a step by step guide and a library of tools and techniques that can be used in the business improvement project.*

## 1. Introduction

The field of Business Process Improvement (BPI) research is one that is increasing in popularity, resulting in several approaches such as Continuous Process Improvement (CPI), Business Process Reengineering (BPR), Process Innovation (PI) and Business Process Benchmarking (BPB) (Macdonald (1995); Hammer & Champy, (1993); Davenport (1994); Camp (1995)). BPI is a broad term that covers a continuum from incremental continuous improvement to the radical re-engineering of the business and its processes. Several methodologies have been proposed in the literature for undertaking BPI. These approaches typically evolve through different stages and have emerged from consultants, academics and practitioners, however, no integrated and clinically tested methodology for BPI exists yet.

This paper proposes a methodology named MIPIM (Model based and Integrated Process Improvement Methodology) for overcoming this limitation by integrating process improvement with modelling techniques. With this integrated methodology, organisations can better understand and implement the steps needed to improve their process, successfully initiate, manage and sustain a process improvement programme. This methodology is being developed through a research project with the Benefits Agency, in the UK public sector. A wide range of input from literature review, company existing methods and best practice are being used. The methodology will be clinically validated from the process improvement project within the sponsoring organisation.

The paper first presents the need for a practical and integrated methodology for improving business processes. The research aim is introduced. A description is given of how the methodology was developed, and a detailed view of the seven-step MIPIM methodology is presented.

## **2. The Need for an Integrated Business Process Improvement Methodology**

Many organisations have adopted a process-orientated view of their operations. The objective of a BPI methodology is to identify and implement improvement to the process. The terminology associated with the 'process' concept has evolved over recent years (Davenport (1993); Harrington (1995); Rummler & Brache (1995)). Hammer & Champy (1993) provide a well-established definition as a "collection of activities that take one or more kind of inputs and creates an output that is of value to the customer".

To achieve a process-orientated organisation requires the execution of a comprehensive and rigorous design of business processes. McAdams (1996) highlighted the need for an increased emphasis on business process in his findings of European quality model self assessment. As Peppard (1995) suggested, a process focus can provide an integrative mechanism in the organisation. BPR and CPI are two major improvement paths being used by organisations. Harrington 1995 illustrates the combination of both to provide effective improvement to the organisation. Zairi (1995) notes that benchmarking is a powerful tool to help organisation decide to opt for incremental change process or radical change. Camp (1995) integrates benchmarking into the process-based approach and shows where it can be used most effectively at each stage of the process. Grover & Jeong (1995) emphasise that a methodology that just results in process improvements being identified is not sufficient by itself, a critical success factor in effective process improvement, and one that is particularly difficult to achieve, is change management.

Several models have been proposed in the literature for undertaking BPI: soft system methodology (Checkland, 1981); generic model (Elzinga et al, 1995; Kaplan and Murdock, 1991; Davenport and Short, 1990; Kettinger et al, 1997); process improvement method (Harrington, 1990); and the socio-technical approach (Wastell et al, 1994; Klein, 1994).

As a complement to business process improvement, methodologies often involve modelling techniques. Modelling is now widely accepted as a valuable activity. Baines (1995) defined a model as "an abstract representation of real processes, constructed to aid understanding and prediction about the real system". There are however many differing forms of model building techniques for process analysis, e.g. IDEF0; flow diagram; role activity diagram (Ould, 1997); swimlanes, and simulation. Choosing the right modelling approach can be key to the success of designing an organisational's process. While a methodology to design and improve a process may exist within an organisation, this is typically fragmented and fails to describe how modelling can be used during the improvement process. The use of modelling techniques for communicating and representing processes requires a practical and participative approach. This paper will help to build knowledge of methods and modelling tools to improve business processes.

It is apparent that the methodologies are incomplete and lacks a systematic and integrated approach for organisations with limited resources to use. Each of these methodologies has both good and bad points; an improved approach could be developed by taking the best of them and strengthening the methodology by including more emphasis on modelling, change management, risks and clinical assessment of the methodology in practice.

## **3. Research Aim**

The aim of the research described in this paper has been to develop a business process improvement methodology that integrates modelling techniques, and to evaluate adoption within a work team environment. The intention here is not to reinvent what already exists, rather to form an integrated and holistic approach based on a foundation of existing techniques

and methods. The methodology will be successful if it is simple and flexible for the business to use; reflects best practice; and creates options for managing risk at any stage during the improvement process. The remainder of this paper describes the formation of this methodology, future work will consider its application.

#### 4. Forming the Business Process Improvement Methodology

This section describes the approach taken to form the MIPIM methodology. Firstly, a review of existing techniques in BPI, related business improvement and modelling techniques formed the survey of literature. The goal was to gain consensus and take the best of breed in the literature to build on. This integrated approach has contributed to forming the draft methodology.

An investigation into the client's needs forms the second input into this formation stage, so that their existing methods of carrying out improvement projects can be captured and incorporated into the proposed methodology. A framework for comparing methodologies (Avison & Fitzgerald, 1988) has been adapted to provide a basis for the description of the nine elements required by a BPI methodology. These are objective, target, conceptual basis, scope, structure, tools and technique, participants, outputs and delivery mechanism. The output was a draft methodology followed by a Delphi study with BPR experts in academic, consultancy and industry and commerce to gather their opinions and incorporate best practice. The feedback from the study was then used in a refinement activity to form the pilot methodology. The research method used to form the methodology is shown in Fig. 1. In addition, the pilot methodology addressed some of the key issues and risks likely to affect the success of the methodology.

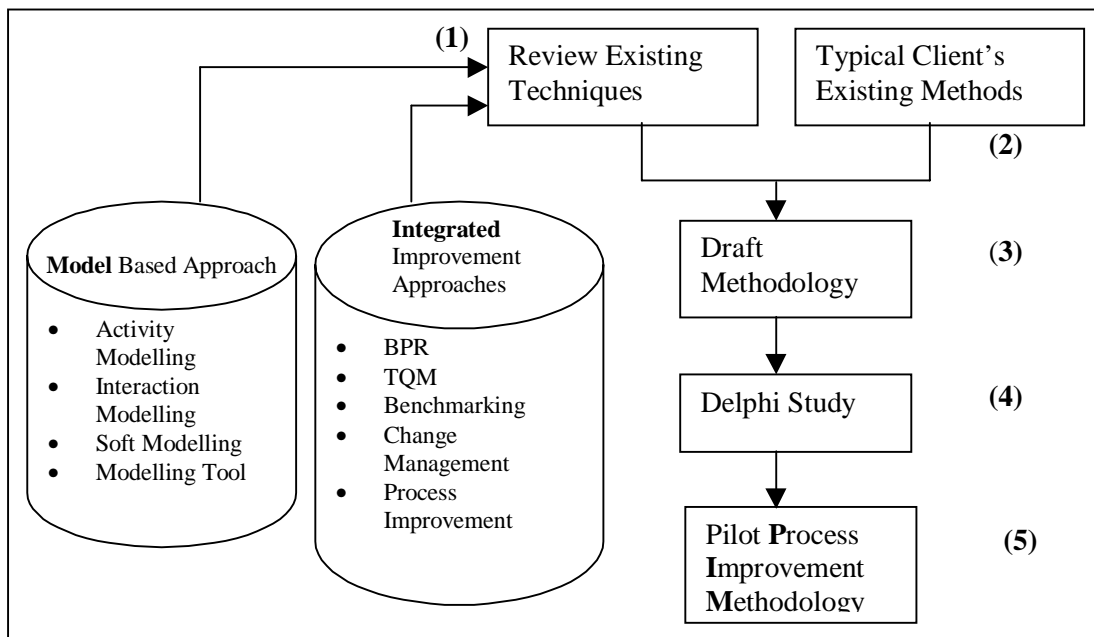


Figure 1: Formation of MIPIM Methodology (Layer 1)

##### 4.1 Structuring the Methodology

The 'MIPIM' (Model based and Integrated Process Improvement Methodology) was coined from the BPI framework to describe the evolution of the methodology from integrated

improvement and model based approaches. Figure 3 below shows a top-level overview of the seven-step comprehensive improvement plan that organisations should consider when implementing BPI.

The methodology is structured (fig. 2) in steps and each step is then broken down into sub-sections. Each step in the process methodology has aim, actions, people involved, outcome and hints and tips. The aim seeks to give the purpose and goal of each step; actions describe how to carry out the step; the people involved in each step is given; outcome describes what is expected as deliverables; and finally some hints and tips on general advice are provided. In addition, the methodology provides the practitioners with library of process analysis tools and modelling techniques to be used while applying the methodology, for example, IDEF<sub>0</sub>, Role Activity Diagram, Swimlanes, etc. Each tool and technique is structured by what, how, when, strength and weakness.

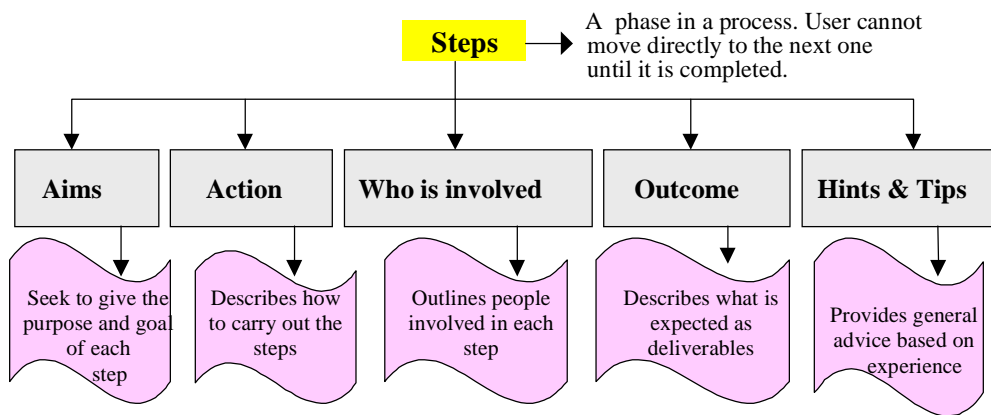


Figure 2: Hierarchical Structure of Methodology

## 5. 'MIPIM' Seven Step Methodology

MIPIM is an integrated methodology that incorporates the concepts and approaches of process improvement and modelling. It provides a simple improvement guideline in which only seven steps are involved. The purpose of the methodology is to achieve better product or service through an effective improvement mechanism. The principal goal of the methodology is to guide a project in the improvement of a business process. The methodology has been developed bearing in mind that it should provide a structured approach for users on what to do and how to do process improvement in the least complex manner.

MIPIM is a seven-step BPI methodology. It serves as a road map to move a process from its current state along a guided path to better performance. For each step, there are some key actions involved. Fig. 3 shows the second layer of MIPIM as a cyclic model. This methodology consists of assessing organisational readiness for change, scoping process boundaries, data collection, modelling, redesign, implementing and reviewing a coherent set of business processes.

The overall purpose of the Seven-Step Methodology is to facilitate process improvement. The following, as illustrated in figure 4, is a step by step overview of the steps, activities involved and techniques to carry out each step.

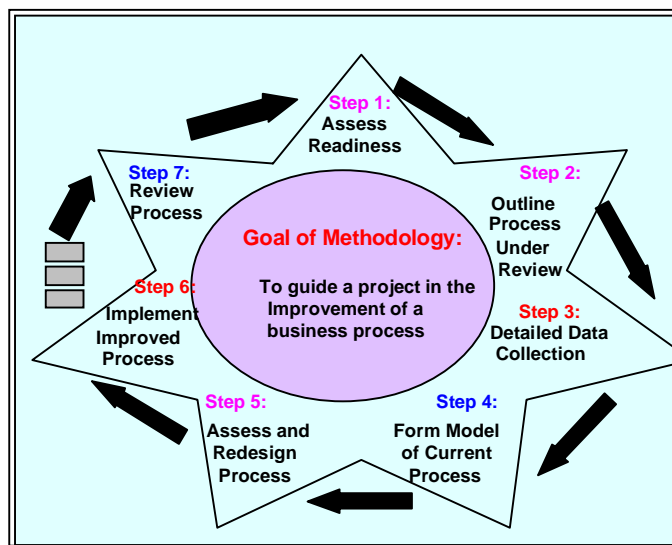


Figure 3: MIPIM Process Improvement Methodology (Layer 2)

On completion of each step, the methodology provides checklists of what to achieve. In addition to these steps, the methodology also provides library of tools and techniques that can be applied during the project. Each technique describes what it is, how and when it can be used, strengths and weaknesses. The methodology provides basic guidelines on types of risks that may pose threat to the adoption of the methodology in an organisation and as a precautionary measure, set out contingency plans to deal with problems that may occur.

The following sub-sections outline the steps and activities in each of the methodology.

### Step One: Assess Readiness

This step assesses the readiness for change and assess the preparatory work that may be needed through a short audit questionnaire to seek commitment from the management, select the process improvement team, and identify process to improve, define goals and objectives and establish stakeholder's expectations. In addition, line of authority and reporting need to be defined and a facilitator skilled in general process improvement selected.

**Techniques:** Search Conference; Process Prioritisation; Readiness Assessment Questionnaires.

### Step Two: Outline Process under Review

This step defining and establishing the boundary and interfaces, dependencies of the target process and other processes, identifying the appropriate measures for the chosen process. Key customer and supplier groups of the target process are identified; this may be both internal and external people. The team's task is to identify and focus on the final outputs that the customers receive and help to capture customers' requirements, needs and expectations. Once the process has been captured, it is important to include a 'reality check' and consider whether you have access required to the process.

**Techniques:** Process Deployment Matrix; Voice of the Customer table and IS/IS Not table.

### Step Three: Detailed Data Collection

Once the target process has been identified, the trained team now begins its work to define the process architecture/flow and understand the operating activities involved in the selected process. This marks the beginning of what the process currently looks like by capturing process knowledge from process experts. This step is executed through expert process analysis tool

(Xpat), an enhancement to IDEF<sub>0</sub>. This step is vital to the success of the improvement. Data from this exercise will now enable a process model to be constructed in the next step.

**Techniques:** Interviews; brainstorming; focus group; workshop; enhanced IDEF<sub>0</sub> process analysis tool; Person centred process chart.

#### **Step Four: Form Model of Current Process**

Once basic information about the process has been collated, it is useful to be able to portray that information in a way that shows the activities and flows of information. This step enables the organisation to understand what and how the business process is currently performed. It enables the team to develop a process map that captures the essential features and flow of the current process within the organisation. The development of a process model will enable organisation to understand, analyse and communicate what is currently happening. The target process need to be defined in more detail and model according to how radical or incremental you wish the change to be. Before creating a model, it is useful to define the purpose of the business process, thus linking back to step 1. There are various tools and techniques that will help an organisation model their business process. These approaches can be adapted to suit the organisation. Once models have been developed, it is important to validate them with the users and try and get agreement. This can be done as a workshop.

**Techniques:** IDEF<sub>0</sub> (activity modelling); Flow diagram; role activity diagram (for mapping role and interaction to the activities); swimlanes; rich pictures and computer modelling tool, such as Enterprise Modeller.

#### **Step Five: Assess and Redesign Process**

This step involves assessment, measurement, identification, and selection for improvement. It is important to analyse the process in line with the objectives set. For each activity in the process model, it is important to consider any issues, problems and opportunities surrounding the current information technology, people issues affecting the process and appropriate measures for the process by conducting 'one to one' meetings with team leaders involved in each activity to surface key issues and problems. The team needs to concentrate on identifying problem areas and finding causes, rather than effects or symptoms identify redundant and non-value added activities. Having identified the critical tasks, benchmarking may be carried out to compare the performance levels with best practices in the same industry. A gap analysis may need to be conducted to compare the data and analyse where and how large the differences are.

Based on the studied and analysed results of the current process, the team begins the creative part in the BPI project of designing alternative solutions, which are linked to improvement objectives. To enable transformation to a new 'TO BE' process, asking challenging questions on what is done, how is done, where is done and whom does it can shape redesigning.

**Techniques:** Cause and Effect Diagram; Value Added Analysis; Process Performance table; Scenario modelling, Simulation, What, Where, Why, Who and How (5 Ws 1H).

#### **Step Six: Implement the improved process**

Implementation is all about action. However before the action can occur, planning is crucial to ensure success. This step provides organisations with an action plan to enable process change implementation of the 'TO BE' process. A separate implementation team needs to be established. By this time, final process design reflecting all changes is ready and mapped to new IT systems requirements. An action plan laying out the objective and scope of the effort, key implementation steps, responsibilities, timeframes, dependencies and measurements should be developed. This improvement needs to be communicated within the organisation and customers, as is a crucial step in change management. A number of approaches to communication may be appropriate, for example, large or small group meetings; printed information; a notice board and informal communication. The plan should develop new policies, procedures, assign jobs to match new process and provide necessary training and

education before the change is made. It is useful to show how the BPI project fits into the organisation's overall strategy and vision.

A changeover pilot testing may be carried out prior to full- scale implementation to confirm the soundness of the improvement process whereby results are verified and fine-tuned. It is also useful to carry out improvement audit to learn from the process, share and transfer learning inside the organisation.

**Technique:** Action Plan, Customer Audit; Improvement Learning Audit

### **Step Seven: Review Process**

The purpose of this step is to carry out ongoing evaluation of process in practice, which may lead to next cycle of improvement. Once the new process is handed over to the process owner, a periodic review of the performance standards needs to occur. Even a well-improved process needs to be monitored and refined over time. Moreover, the business environment will continue to change and the organisation has to find ways to continuously improve its business processes. Thus, the final activity of the methodology is to incorporate techniques from the total quality management and excellence model for continuous improvement and then revert back to the methodology for improving the next process. The improvement loop if followed will eventually lead the organisation to achieve process excellence.

**Techniques:** The Opportunity Cycle; Deming's Plan, Do, Check and Act cycle; Failure Mode and Effects Analysis and Self- Assessment.

## **6. Conclusions**

The paper has presented a comprehensive model based and integrated process improvement methodology (MIPIM). The methodology proposed in this paper provides preliminary step by step guide to assist organisations in the business improvement project. MIPIM methodology could serve as a checklist on how closely such procedures are actually being followed and can assist in disseminating good practice. Following this methodology would result in understanding of the process currently followed inside an organisation and also will be a good starting point for future process improvement programmes and process benchmarking exercise.

The research is continuing with the application and assessment of the methodology in an industrial partner.

## **7. References**

- AVISON, D.E. AND FITZGERALD, G. **Information Systems Development**. Oxford, Blackwell Scientific Publications, 1988.
- BAINES, T.S. **Modelling in the Evaluation of a Manufacturing Strategy**. PhD Thesis, Cranfield University, 1995.
- CAMP, R.C. **Business Process Benchmarking**, Milwaukee, WI, ASQC Quality Press, 1995.
- CHECKLAND, P. **Systems Thinking, Systems Practice**, Chichester, John Wiley, 1981.
- DAVENPORT, T.H. **Process Innovation: Reengineering Work through Information Technology**, Boston, Harvard Business School Press, 1993.
- DAVENPORT, T.H. AND SHORT, J.E. The new industrial engineering: information technology and business process redesign, **Sloan Management Review**, vol.31 No 4, 1990, p. 11-27.
- ELZINGA, D; HORAK, T; LEE, C-Y. AND BRUNER, C. Business Process Management: Survey and Methodology. **IEEE Transactions on Engineering Management**, vol 42 No 2, 1995, p.119-128
- GROVER, G.; JEONG, S.R. The implementation of business process Reengineering. **Journal of Management Information Systems**, vol 12 No 1, 1995, pp.109-144

HAMMER, M.; CHAMPY, J. **Reengineering the Corporation: A Manifesto for Business Revolution**, New York, NY, HarperCollins, 1993.

HARRINGTON, H.J. **Business Process Improvement**, New York, McGraw-Hill, 1991.

KAPLAN, R.B.; MURDOCK, L. Core process redesign. **The McKinsey Quarterly**, No 2, 1991, p. 27-43.

KETTINGER, W.; TENG, J.T.C.; GUHA, S. Business Process Change: A study of methodologies, techniques, and tools. **MIS Quarterly**, vol 21 No 1, 1997, p.55-80.

KLEIN, M.M. Reengineering methodologies and tools. **Information Systems Management**, vol.11 No.2, 1994, p.30-35.

MACDONALD, J. Together TQM and BPR are winners. **The TQM Magazine**, vol 7 No 3, 1995, p. 21-25.

McADAM, R. An integrated business improvement methodology to refocus business improvement efforts. **Business Process Re-engineering & Management Journal**, vol 2 No 1, 1996, p. 63-71.

OULD, M.A. Designing a Re-engineering –proof Process Architecture. **Business Process Management Journal**, vol 3, No 3, 1997

PEPPARD, J. Broadening Visions of BPR: the Imperative of Strategic Integration. Cranfield University, **SWP 11/95**, 1995.

POVEY, B. The development of a best practice business process improvement methodology. **Benchmarking for Quality Management & Technology**, vol 5 No 1, 1998, p. 27-44

RUMMLER, G.; BRACHE, A. **Improving Performance – How to Manage the White Space on the Organisational Chart**. 2<sup>nd</sup> Ed. Jossey-Bass, 1995.

WASTELL, D.; WHITE, P.; KAWALEK, P. A Methodology for business process redesign: experiences and issues. **Journal of Strategic Information Systems**, vol 3 No1, 1994, p.23-40.

ZAIRI, M. The integration of benchmarking and BPR – A matter of choice or necessity? **Business Process Reengineering & Management Journal**, vol 1 No 3, 1995, p. 3-9